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Filed on 18 November 2002 (18.11.2002)
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- Declaration under Rule 4.17:**
— of inventorship (Rule 4.17(iv)) for US only
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— with international search report
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD OF TREATMENT OF MYOCARDIAL INFARCTION

(57) Abstract: Myocardial infarction in a mammal is treated by administering to the mammal a therapeutically effective amount of a chemical Src family tyrosine kinase protein inhibitor and the use of such inhibitor compounds for the preparation of a medicament for treating myocardial infarction. Myocardial infarction can be prevented by administering to the mammal a prophylactic amount of the inhibitor. The inhibitor preferably is an inhibitor of Src protein selected from the group consisting of a pyrazolopyrimidine class Src family tyrosine kinase inhibitor, a macrocyclic dienone class Src family tyrosine kinase inhibitor, a pyrido[2,3-d]pyrimidine class Src family tyrosine kinase inhibitor, a 4-anilino-3-quinolinecarbonitrile class Src family tyrosine kinase inhibitor, and a mixture thereof. The Src family tyrosine kinase inhibitors can be used to prepare medicaments for the treatment of myocardial infarction. Also disclosed are articles of manufacture containing a chemical Src family tyrosine kinase inhibitor.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/37653

B x I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

B x II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-6, 10-17, 21-27, and 29-31 as drawn to AGL 1872

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/37653

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 31/519, 38/45

US CL : 514/262.1; 424/94.5

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 514/262.1; 424/94.5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 5,731,343 A (FENG et al.) 24 March 1998 (24.03.1998), see column 2, 3, 7, and example 2.	1-5, 10, 11, 14-16, 21-25, 29, 30 — 6, 12, 13, 17, 27, 31
X — Y	US 2002/0156081 A1 (HIRST et al.) 24 Oct 2002 (24.10.2002), see paragraphs 311, 313, 349, 364, and 391.	1-5, 10, 11, 14-16, 21-2629, 30 — 6, 12, 13, 17, 27, 31
P, X — Y	US 2003/0187001 A1 (CALDERWOOD et al.) 02 Oct. 2003 (02.10.2003), see paragraphs 53, 97, 111, and 126.	1-5, 10, 11, 14-16, 21-25, 29, 30 — 6, 12, 13, 17, 27, 31
X — Y	US 2002/0123484 A1 (DAS et al.) 05 Sept. 2002 (05.09.2002), see paragraphs 161, 164, and 170.	1-4, 11, 14, 15, 21-25, 29 — 12, 13



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

04 August 2004 (04.08.2004)

Date of mailing of the international search report

07 SEP 2004

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — y	US 6,235,740 (BARRISH et al.) 22 May 2001 (22.05.2001), see columns 17 and 19.	1-4, 11, 14, 15, 21-25, 29 — 12, 13
Y	HANKE, J.H. et al. Discovery of a Novel , Potent, and Src Family-Selective Tyrosine Kinase Inhibitor. J. Biol. Chem. 12 Jan. 1996, Vol. 271, No. 2, pages 695-701, see entire document.	6, 17, 27, 31

INTERNATIONAL SEARCH REPORT

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

Src kinase inhibitors: 4-amino-5-(4-methylphenyl)-7-(t-butyl) pyrazolo [3,4-d] pyrimidine (AGL 1872), 4-amino-5-(4-chlorophenyl)-7-(t-butyl) pyrazolo [3,4-d] pyrimidine (AGL 1879), geldanamycin, herbimycin A, Radicicol R2146, PD173955 and SKI-606 and methods use thereof for treating myocardial infarction.

The claims are deemed to correspond to the species listed above in the following manner:

Claims 1-6, 10-17, 21-27 and 29-31 are drawn to the species of 4-amino-5-(4-methylphenyl)-7-(t-butyl) pyrazolo [3,4-d] pyrimidine (AGL 1872),

Claims 1-6, 10-17, 21-27 and 29-31 are drawn to the species of 4-amino-5-(4-chlorophenyl)-7-(t-butyl) pyrazolo [3,4-d] pyrimidine (AGL 1879),

Claims 1-5, 7, 10-16, 18, 21-25, 29-30, and 32 are drawn to the species of geldanamycin,

Claims 1-5, 7, 10-16, 18, 21-25, 29-30, and 32 are drawn to the species of herbimycin A,

Claims 1-5, 7, 10-16, 18, 21-25, 29-30, and 32 are drawn to the species of Radicicol R2146,

Claims 1-5, 8, 10-16, 19, 21-25, and 29-30 are drawn to the species of PD173955 and

Claims 1-5, 9-16, 20-25, 28-30 and 33 are drawn to the species of SKI-606

The following claim(s) are generic to 2 or more of the above species: 1-7, 10-18, 21-27, and 29-32.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: the only shared technical feature among each of the above species is that they are all Src kinase inhibitors being used for the treatment of myocardial infarction. However, this shared technical feature does not constitute a special technical feature as defined by PCT Rule 13.2 as it does define a contribution over the art. Feng et al. (US Patent 5,731,343) and Hirst et al. (US Patent Application 2002/0156081) each teach the treatment of myocardial infarction using compounds disclosed as a Src kinase inhibitor.

Continuation of B. FIELDS SEARCHED Item 3:

STN: Medline, SciSearch, LifeSci, Biotechds, Biosis, EMBase, HCA, NTIS, ESBiobase, Biotechno, WPI, REG, search terms: infarct\$, src, inhibit\$, PP1